Remarks/Arguments

Applicants have carefully considered the final action and submit the following response.

Rejection under 35 U.S.C. §103 over Clark alone or in combination with Chesser

The examiner rejected new claims 193-221 as obvious under 35 U.S.C. §103(a) over Clark et al (5,658,860) alone, or in combination with Chesser et al (6,403,537).

Response

The examiner has not pointed to any teaching or suggestion in Clark or elsewhere that would motivate a person of ordinary skill in the art (a "PHOSITA") to select the claimed **insoluble fatty acid soap particles comprising alkali metal** for use **"as"** Clark's oil phase. Clark, col. 5, l. 14. In addition to the fact that the alkali metal fatty acid soap particles are specified in the claims to be "insoluble," a PHOSITA would have been aware of the teachings of U.S. Patent No. 3,048,538 ("Rosenberg") and U.S. Patent No. 3,047,494 to Browning ("Browning"), which both teach away from selecting alkali metal derivatives of fatty acids as extreme pressure lubricants, particularly for use in drilling in the Gulf Coast region.

Rosenberg acknowledges that incorporating alkali metal soaps of fatty acids imparts "extreme pressure lubricating properties to water base drilling muds" (U.S. Patent No. 3,048,538 to Rosenberg, col. 1, ll. 14-26). However, Rosenberg also recognizes that drilling fluids comprising alkali metal soap can be contaminated with calcium ions during use, resulting in **"curds of an insoluble calcium soap form[ing] and separate[ing] from the drilling mud."** Rosenberg, col. 1, ll. 30-31. Rosenberg states that **"[t]his "greasing out" of the calcium soap seriously interfere[es] with control of the mud system."** Rosenberg, col. 1, ll. 31-33.[1] A PHOSITA would have recognized that drilling fluids may encounter calcium ions during drilling operations. A PHOSITA also would have been familiar with the teachings of U.S. Patent No.

[1] Rosenberg attempts to avoid the harmful effects of calcium ions alkali metal fatty acid lubricating additives by incorporating dispersing agent(s) "in the drilling muds to disperse the insoluble calcium soaps and prevent their separation to interfere with drilling processes." Rosenberg, col. 1, ll. 69-71. Unfortunately, dispersing agents are

3,047,494 to Browning ("Browning), which specifically recommends using metal soaps of fatty acids "**other than the alkali metal soaps**" as extreme pressure lubricating additives--at least for Gulf Coast drilling conditions. Browning, col. 3, ll. 4-9 and col. 2, ll. 7-11.

The examiner has not pointed to any teaching or suggestion in any reference to select insoluble **lithium** soap particles for this purpose. Claims 205, 206. The examiner certainly has not pointed to any teaching or suggestion specifically to use **lithium stearate** for such purpose. Claims 211-221.

The examiner also has not established a reasonable expectation of success of the claimed method. The examiner has not established that a PHOSITA would have expected insoluble fatty acid soap particles **of an alkali metal** to "react . . . with one or more metal surfaces of drilling equipment." Weighing against any such assumption is the testimony of Michael Otto that he "did not know before the laboratory evaluation whether lithium stearate would react with and blue metal surfaces." Otto Declaration, submitted herewith, ¶ 21.

The examiner certainly has not established that the claimed alkali metal fatty acids could be used successfully in combination with polymers comprising one or more monomers comprising acrylamide. Claims 202-210 and 218-221. Weighing against any such assumption is the following testimony of Michael Otto:

> During the early 1980's, I was working with a BHDF customer on location in the Imperial Valley of California. Otto Decl., ¶ 4. At least some of the wells drilled by the BHDF customer in the Imperial Valley were geothermal wells. Geothermal wells can have extremely high bottom hole temperatures (in excess of 500° F). Otto Decl., ¶ 5. The mud systems used by BHDF to drill geothermal wells in the Imperial Valley during the 1980's comprised high temperature acrylamide based copolymers. Otto Decl., ¶ 6.
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> While drilling one geothermal well using a BHDF high temperature, copolymer mud system comprising acrylamide copolymer, the mud system was treated with a high temperature, extreme pressure lubricant called "LUBRI-FILM." Otto Decl., ¶ 7. LUBRI-FILM is an aluminum stearate/lignosulfonate dispersant. Otto Decl., ¶ 8. The mud system treated with LUBRI-FILM exhibited reduced torque and drag, but also exhibited an abnormal increase in mud viscosity. Otto Decl., ¶ 9. The abnormal increase in viscosity was believed to be partially due to a solids build up in the mud system. In order to resolve the solids build-up problem, a large portion of the mud

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likely to interfere with maintaining the insoluble colloidal or near colloidal dispersion which is required "for any E.P. additive to function effectively in any drilling mud" according to Browning. Browning, col. 2, ll. 41-42.

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